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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,288	09/19/2003	Mathew A. Boesch	81044339/202-0355	2287
28395 7590 09/18/2007 BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			EXAMINER PIPALA, EDWARD J	
			ART UNIT 3663	PAPER NUMBER
			MAIL DATE 09/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/605,288

Applicant(s)

BOESCH ET AL.

Examiner

Edward Pipala

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office action is in response to Applicant's arguments and remarks received 6/22/07.

Claims 1-19 are still pending

The rejection of claims 1-19 under 35 U.S.C. 101 as being drawn to non-statutory subjected matter is maintained.

The rejection of claims 1-19 under 35 U.S.C. 102 (e) as being anticipated by Nada et al. (6,654,648) is also maintained.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-19 are rejected under 35 U.S.C. § 101 in that the claimed invention is directed to non-statutory subject matter.

Independent claims 1 and 10 recite a method of validating engine and motor velocities in a vehicle including an engine and a first motor arranged in a vehicle architecture such that at least one known mathematical relationship exists between the engine velocity and the velocity of the first motor (and second motor), said method comprising measuring engine speed/velocity, measuring the velocity/speed of the first

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(and second) motors, and mathematically combining these values according to an equation so as to determine if said mathematical combination falls within a predetermined speed range, thereby validating the engine velocity, the velocity of the first motor (and with respect to claim 10, the velocity of the second motor).

In the above, Applicant is essentially attempting to preempt others from applying a "known mathematical relationship", and using an equation representing said mathematical relationship relating the velocity of an engine and the velocity of a first motor (and even a second motor in claim 10), and therefrom determining whether a "mathematical combination" of the velocities of the engine and motor are within a predetermined speed range. This is the equivalent to nothing more than an abstract idea, law of nature or even a natural phenomenon in that even Applicant admits in the claim that all of the above is "arranged in a vehicle architecture such that at least one known mathematical relationship exists between the engine velocity and the velocity of the first motor" (added/amended portion of claims 1 and 10).

The above is an effective example of a judicial exception with respect to 35 U.S.C 101, in that it still an abstract idea/natural phenomenon that the shaft speeds of an engine and at least one motor will vary proportionally to each other simply *because* of the fact that they are interconnected by means of a planetary or other gearbox/transmission, which has known ratios of teeth for each of the gears, etc.

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It is precisely for this reason that Applicant's claims are considered to be directed to non-statutory subject matter, e.g., Applicant is attempting to patent a generally known abstract idea or natural phenomenon (e.g., a mathematical relationship between engine and motor speeds), without applying the end result of the mathematical relationship, first or other equations or mathematical combinations without applying the/some type of end result to an otherwise useful, concrete or tangible result (which would overcome the above judicial exception).

With respect to dependent claims 2-9, where claim 2 further recites the use of "at least one additional equation when the mathematical combination of the engine velocity and the velocity of the first motor is not within the first predetermined speed range", this still does nothing more than introduce another mathematical algorithm into the mix, without any concrete and tangible end result.

With respect to dependent claims 11-19, where claim 11 further recites an equation for comparing a first combined speed term to a predetermined range, which also recites speed range ratios. Once again, this is simply the addition of another mathematical algorithm to the mix without having the result of the claim leading to a useful, concrete and tangible result. Claims 12-19 further do not add anything more than mathematical manipulations of relative values, without providing or ending in a useful, concrete and tangible result.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Nada et al. (PN 6,654,648, previously cited by the Examiner).

Independent claims 1 and 10, as noted above, recite a method of validating engine and motor velocities in a vehicle including an engine and a first motor arranged in a vehicle architecture such that at least one known mathematical relationship exists between the engine velocity and the velocity of the first motor (and second motor), said method comprising measuring engine speed/velocity, measuring the velocity/speed of the first (and second) motors, and mathematically combining these values according to an equation so as to determine if said mathematical combination falls within a predetermined speed range, thereby validating the engine velocity, the velocity of the first motor (and with respect to claim 10, the velocity of the second motor).

Nada et al. discloses a technique of monitoring abnormality in plural CPUs or controllers of a hybrid vehicle containing an engine (150), a first motor (MG1) and a

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second motor (MG2), as shown on the front and in figure 2. More explicitly, and with respect to sensing motor and/or engine speeds, please see the top of the flowchart of figure 10, which teaches determining whether the motor speeds are within a preset/predetermined range, and in the next step therefrom determining if there is an "occurrence of abnormality" in step S320. Furthermore, in col. 8, line 39 through col. 9, line 44, Nada et al. particularly discloses the relationship between the basic operations of a hybrid vehicle and the relative shaft speeds of each of the motors and engine due to the fact that they are all connected through a planetary gearbox whereby the various shaft speeds then hold certain relationships depending on the gear ratio, etc. The bottom of column 8 gives several equations relating the shaft speeds depending on the number of teeth on the sun and ring gears of the planetary gearbox, by means of which it is determined whether or not there is an abnormality depending on whether the net result for an equation falls within a predetermined range (as taught in the lower portion of column 5). Nada et al., as mentioned previously, also teaches or discloses the use of numerous versions of equations with which verification or validity processing is accomplished (col. 1, ll. 40-49, col. 2, ll. 57-60, bottom of col. 8 and latter portion of col. 21).

Response to Arguments

4. Applicant's arguments filed 6/22/07 have been fully considered by the Examiner, but are not deemed persuasive in view of the present rejection of claims 1-19 under 35 U.S.C. 101 and 35 U.S.C. 102(e).

Applicant's arguments with respect to the rejection under 35 U.S.C. 101 have been fully considered, but are not persuasive because the claimed invention is seen to be nothing more than an embodiment of a well known mathematical relationship which exists between an engine and one or more motors of a hybrid vehicle when all are physically interconnected by mean of a gearbox or transmission of said vehicle.

The fact that Applicant has amended the claims to include language in the claims reciting that it is a "known mathematical relationship" doesn't help Applicant's argument that the claimed useful end result is the validation itself. This being so because the Office has long held that mathematical algorithms are not considered to be patentable subject matter with respect to 35 U.S.C. 101, and Applicant's concept of the act, process or instance of validating as being a useful end result is in reality only the processing of a mathematical combination (algorithm) according to a known mathematical relationship (e.g., a manifestation of a law of nature).

Even when the claims are taken as a whole to determine if Applicant has determined a particular application of an abstract idea, natural phenomenon or law of nature, the claimed subject matter still only falls in the realm of being a mathematical algorithm with no end result.

Applicant's arguments with respect to a prima facie prior art rejection of claims 1-19 as being anticipated by Nada et al. (6,654,648) are still not seen to be persuasive in

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that regardless of whether or not separate controllers/CPUs are in control of each of the first and second motors, the main motor control unit inherently performs the claimed validation of engine and motor velocities in a vehicle architecture such that at least one known mathematical relationship exists between the engine velocity and the velocity of the first motor where each is operable to output torque to at least one vehicle wheel.

This is also why a mathematical algorithm type rejection under 35 U.S.C. 101 has been applied to the claims, since such mathematical relationships will then inherently exist in such a vehicle architecture whether or not it is the main purpose to actually validate speeds, where Nada et al. is even particularly directed to detecting abnormalities in a motor vehicle of such a vehicle architecture.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Pipala whose telephone number is 571-272-1360. The examiner can normally be reached on M-S 9:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ejp

/Jack W. Keith/
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